

WHAT IS CLAIMED:

1. (Cancelled)
2. (Currently Amended) The method of Claim 27 wherein
the electrode for the electrothermal fluidized bed furnace of
Claim 1 wherein the electrode has a distal end and the distal
end is located within the first cylindrical portion of the
furnace body.
3. (Currently Amended) The method of Claim 27 wherein
the electrode for the electrothermal fluidized bed furnace of
Claim 1 comprising comprises a single electrode extending
centrally through the furnace body.
4. (Currently Amended) The method of Claim 27 wherein
the electrothermal fluidized bed furnace of Claim 1 comprising
comprises a plurality of electrodes extending through the
furnace body and arranged symmetrically about the central axis
thereof.
5. (Currently Amended) The method of Claim 27 wherein
the conical portion of the electrothermal fluidized bed furnace
of Claim 1 wherein the conical portion defines a central angle
of from 30° to 90°.
6. (Currently Amended) The method of Claim 27 wherein
the conical portion of the electrothermal fluidized bed furnace
of Claim 1 wherein the conical portion defines a central angle
of from 40° to 60°.

7. (Currently Amended) The method of Claim 27 wherein
each nozzle of the electrothermal fluidized bed furnace of Claim
~~1~~ wherein each nozzle is arranged so that the stream of
fluidizing gas enters the conical portion at an acute angle
with respect to a tangent to the wall of the conical portion.

8. (Currently Amended) The method of Claim 27 wherein
the nozzles of the electrothermal fluidized bed furnace of Claim
~~1~~ wherein the nozzles have a central axis and the nozzles are
oriented with respect to the conical portion wall so that the
axis of each nozzle and a tangent to the wall of the conical
portion at the location of the nozzle defines an angle of from
10° to 20°.

9. (Currently Amended) The method of Claim 27 wherein
the conical section of the electrothermal fluidized bed furnace
~~of Claim 1~~ wherein the conical section has a total height H_{TC},
and the nozzles are disposed in the conical section at a
distance above the bottom of the conical section of from 0.5 H_{TC}
to 0.75 H_{TC}.

10. (Currently Amended) The method of Claim 27 wherein
the nozzles of the electrothermal fluidized bed furnace of Claim
~~1~~ wherein the nozzles are disposed in the conical section at a
distance above the bottom of the conical section of from 0.6 H_{TC}
to 0.6 H_{TC}.

11. (Currently Amended) The method of Claim 27 wherein
the fluidized bed zone of the electrothermal fluidized bed
furnace of Claim 1 wherein the fluidized bed zone has a height
that is less than or equal to twice the height of the first
cylindrical portion.

12. (Currently Amended) The method of Claim 27 wherein
each nozzle of the electrothermal fluidized bed furnace of Claim
1 wherein each nozzle has a ring cross-sectional area and the
sum of the ring cross-sectional areas of the nozzles is from
0.15% to 0.5% of the cross-sectional area of the first
cylindrical portion of the furnace body.

13. (Currently Amended) The method of Claim 27 wherein
each nozzle of the electrothermal fluidized bed furnace of Claim
1 wherein each nozzle has a ring cross-sectional area and the
sum of the ring cross-sectional areas of the nozzles is from
0.25% to 0.4% of the cross-sectional area of the first
cylindrical portion of the furnace body.

14-26. (Canceled)

27. (Currently Amended) A method for the continuous
treatment of particulate matter comprising:

providing an electrothermal fluidized bed furnace having
a furnace body with a first cylindrical portion
having a height, a second cylindrical portion
disposed above the first cylindrical portion and

having a diameter larger than that of the first cylindrical portion, and a conical portion disposed below the first cylindrical portion, the first cylindrical portion and conical portion defining a fluidizing zone, and the second cylindrical portion defining an overbed zone;

at least one electrode disposed within the furnace body and extending through the first and second cylindrical portions;

a treated material discharge pipe at the lower end of the conical portion;

a raw material feed pipe for introducing raw material into the first cylindrical portion;

at least one gas flue at the top of the furnace body for discharging fluidizing gas; and

a plurality of nozzles disposed in the conical section for introducing fluidizing gas into the furnace, the nozzles being arranged in a generally horizontal plane, and the nozzles having outlets that are being orientated so that streams of fluidizing gas are introduced horizontally into the conical section therethrough cross and subsequently form an upward flow in the central portion of the furnace body;

continuously introducing fluidizing gas through the nozzles of the furnace at a predetermined rate;

continuously introducing untreated particulate material through the feed pipe of the furnace at a predetermined rate so that the particulate matter forms a fluidized bed principally within the first cylindrical portion of the furnace;

energizing the electrode so as to heat the fluidized bed; and

continuously collecting treated particulate matter from the discharge pipe of the furnace.

28. (Original) The method of claim 27 wherein the untreated particulate matter has a particle size smaller than $180\mu\text{m}$ (80 mesh).

29. (Original) The method of claim 27 wherein the untreated particulate matter comprises carbonaceous materials.

30. (Currently Amended) The method of claim 27 wherein the untreated particulate matter comprises graphite selected from the group ~~comprising~~ consisting of flake graphite, synthetic graphite, amorphous graphite, and vein graphite.

31. (Currently Amended) The method of claim 27 wherein the untreated particulate matter comprises coke selected from the group ~~comprising~~ consisting of fluid coke, flexi-bed coke, pitch coke, delayed coke, and needle coke.

32. (Original) The method of claim 27 wherein the untreated particulate matter comprises an electroconductive or semiconductive material.

33. (Currently Amended) A product resulting from the treatment of particulate coke selected from the group ~~comprising~~ consisting of fluid coke, flex-bed coke, pitch coke, delayed coke and needle coke in accordance with the method of claim 27.

34. (Original) A product resulting from the treatment of particulate graphite selected from the group ~~comprising~~ consisting of flake graphite, synthetic graphite, amorphous graphite and vein graphite in accordance with the method of claim 27.